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A Comparative Review of Visual Perception Assessment Tools for Adults with Brain Injury

Krista Wohlfert
Western Michigan University

Jennifer Bosworth
Western Michigan University, jennifer.m.bosworth@wmich.edu

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1 Ask: Research Question

What is the most valid and reliable tool for assessing visual perception among adults with a brain injury?

2a Acquire: Search Terms

Databases: PubMed, Clinical Key, Scopus, CINAHL, OT Seeker, Cochrane Library

Search Terms: visual assessment, brain injury, perception and vision, MVPT, OT-APST, LOTCA, DTVP, visual perception, vision, perception, vision tool

2b Acquire: Selected Articles

Brown et al. (2012): A cross-sectional, prospective study that compares the validity and reliability of the Developmental Test of Visual Perception-Adolescent and Adult (DTVP-A), the Motor-Free Visual Perception Test-third edition (MVPT-3) and the Test of Visual Perceptual Skills (non-motor)-third edition (TVPS-3) when administered to participants with a variety of neurological impairments.

Razemba, Jacobs, & Franzsen. (2017): A quantitative correlational study to determine the convergent validity of the Occupational Therapy Adult Perceptual Screening Test (OT-APST) with the Dynamic Lowenstein Occupational Therapy Cognitive Assessment (DLOTCA) and the Rivermead Perceptual Assessment Battery (RPAB) when administered to participants with a primary diagnosis of stroke.

3a Appraise: Study Quality

Brown et al. (2012): Level 1. A psychometric study of convergent validity for three common visual perception assessments. Limitations include all participants being from a similar geographical region and only using assessments similar in administration methods. Generalizability to American population is unknown due to study being conducted in Australia.

Razemba, Jacobs, & Franzsen. (2017): Level 1. A psychometric study of correlation between three common visual perception assessments in South Africa. Limitations include only addressing one type of brain injury and small sample size. Generalizability to American population is unknown due to study being conducted in South Africa.

The OP-APST is recommended based on the short administration time and functional components.

3b Appraise: Study Results

Table 1. Psychometric properties of the six assessments reviewed

Table 1					
Assessment	**Neurological Population Assessed**	**Correlation**	**Ages**	**Administration Method**	**Benefits**
Study 1					
DTVP-A	Stroke, Brain tumor, Multiple sclerosis, Closed head injury	MVPT-3 and TVPS-3 (p<.01)	11-0 through 74-11	Flipbook, black and white graphics	• 25 minutes • Internal consistency, stability, and inter-scorer reliability for all indexes are high • $270.00
MVPT-3	Stroke, Brain tumor, Multiple sclerosis, Closed head injury	DTVP-A and TVPS-3 (p<.01)	3-0 through 94-0	Flipbook (test plates), black and white graphics	• 20-30 minutes • Internal consistency and test-retest reliability are high • $175.00
TVPS-3	Stroke, Brain tumor, Multiple sclerosis, Closed head injury	DTVP-A and MVPT-3 (p<.01)	4-0 through 18-0	Flipbook, black and white graphics	• 30 minutes • Internal consistency good, overall satisfactory test-retest reliability, insufficient test-retest reliability for subscales, good convergent validity • $175.00
Study 2					
OT-APST	Stroke	DLOTCA and RPAB (p<.01)	16-0 through 97-0	Flipbook, reading card, timer, blocks, stapler, and puzzle pieces	• 20-25 minutes • Inter-rater, intra-rater, and test-retest reliability as well as face, content, construct, criterion, and ecological validity are high • $638.82
DLOTCA	Stroke	OT-APST and RPAB (p<.01)	18-0 through 69-0	Paper and pencil format with card set, photo book, blocks, scissors, peg board, shape set, puzzle, etc.	• 45 minutes • Internal consistency, inter-rater reliability, and construct validation are high • $327.50
RPAB	Stroke	OT-APST and DLOTCA (p<.01)	16-0 through 97-0	Paper and pencil format with toothbrushes, blocks, cups, foam shapes, etc.	• 45-60 minutes • Inter-rater reliability high, good test-retest reliability on 11 subtests, good validity • $1404.52

The two studies found the DTVP-A, MVPT-3 and the TVPS-3 to have high levels of convergent validity with one another and the OT-APST to have construct validity when compared to the DLOTCA and RPAB.

4 Apply: Conclusions for Practice

This suggests the assessments in each study were found to be significantly correlated to each other signifying that the three assessments in each study are interchangeable in practice.The DTVP-A, MVPT-3, and TVPS-3 are all similar in administration, cost, and time but do not use functional components when assessing visual perception and instead use abstract flipbooks. The DLOTCA is a long assessment with 26 subtests that focuses heavily on cognition. The RPAB is not cost effective and takes up to 60 minutes to administer. The OT-APST was created from a combination of assessments to cut back on administration time while screening for necessary visual assessment components.

References:

Brown, T., Elliot, S., Bourne, R., Sutton, E., Wigg, S., Morgan, D., Glass, S., & Lalor, A. (2012). The convergent validity of the Developmental Test of Visual Perception-Adolescent and Adult, Motor-Free Visual Perception Test-third edition and Test of Visual Perceptual Skills (non-motor)-third edition when used with adults. *British Journal of Occupational Therapy, 75*(3), 134-143. doi:10.4276/030802212X13311219571783.

Razemba, F., Jacobs, L. & Franzsen, D. (2017). Convergent validity of the Occupational Therapy Adult Perceptual Screening Test (OT-APST) with two other cognitive-perceptual tools in a South African Context. *South African Journal of Occupational Therapy, 47*(2), 3-10. doi:10.17159/2310-3833/2017/v47n2a2.